

The FCC should reject the ARRL's "Regulation by Bandwidth" petition RM-11306 because its adoption would significantly increase interference from unattended automatic stations. In section IV, sub-section 16 of RM-11306, the ARRL proposes to "modify Section 97.221(c) to delete the limitations on semi-automatic control and to permit the same throughout the amateur HF bands". The ARRL justifies this proposal by asserting that

- a. semi-automatic control "appears to be practical as a generalized operating practice"
- b. "residual risk of interference from this station (or network) configuration can best be managed by the Amateur community through a combination of technology (including further development of listen-before-transmit protocols) and respectful operating practices (which are already necessitated and practiced by radio amateurs)."

The first of these assertions is incorrect, and the second is seriously inadequate.

Section 97.221 permits an automatically controlled station to transmit in response to interrogation by a remote station. In this form of operation, the remote station is not in control of the automatically controlled station – rather, the remote station activates the automatic station by transmitting a request in the protocol understood by the automatic station. In particular, the remote station cannot reliably know whether transmission by the automatic station will interfere with communications between other stations already in progress on the frequency. The frequency may appear clear to the remote station's operator, but propagation may preclude that operator from accurately determining that the frequency is already in use from the perspective of the automatic station, and thus that transmission by the automatic station would interfere with an ongoing communication. This has been referred to as the "hidden transmitter effect".

When the FCC added Section 97.221 in April 1995, it acknowledged this problem, stating in PR Docket No. 94-59 "We do recognize the concerns of those who oppose the proposal on the basis of potential interference, and in response to these concerns we are limiting when automatic control can be employed. First, the control operator of the station that is connected to the automatically controlled station must prevent the automatically controlled station from causing interference. Second, we are designating subbands to which transmissions between two automatically controlled stations are confined. These subbands are a small portion of the spectrum otherwise available for digital emission types. We also are confident in the ability of the amateur service community to respond, as it has in the past, to the challenge of minimizing interference with novel technical and operational approaches to the use of shared frequency bands."

While 97.221(b) confines transmissions between two automatically controlled stations to subbands, 97.221(c) permits an automatic station transmitting RTTY or data with bandwidth of 500 Hz. or less to respond to interrogation by a remote station on any frequency for which these emission types are authorized.

Over the past several years, the development of software that supports digital transmission via a personal computer and its soundcard has dramatically increased experimentation with and use of novel digital protocols for amateur communication. The majority of these digital

communications are between attended stations. As the number of automatic stations operating under 97.221(c) has increased, communications between attended stations using digital protocols have been increasingly disrupted by the aforementioned hidden transmitter effect. Despite the FCC's expectation that the amateur service would respond to "the challenge of minimizing interference with novel technical and operational approaches to the use of shared frequency bands", the ARRL has taken no action to mitigate this problem. The obvious first step – a band plan that reduces contention between attended operations and automatic operations under 97.221(c) – has not been taken; in fact, the ARRL's currently-published band plan is so obsolete that the most popular digital modes, broadly adopted for years, are not represented.

In combination with other elements of RM-11306, eliminating 97.221(c) would permit remote invocation of automatic stations everywhere on the amateur bands, limited only by bandwidth maxima. Remotely-invoked automatic stations now confined to the sub-bands defined in 97.221(b) because their bandwidth exceeds the 500 Hz. limit of 97.221(c) would be free to operate in the much broader segments available to signals of their bandwidth maxima. The result will be a significant increase in interference to ongoing transmissions, dramatically expanding the conflict experienced today by digital mode operators from remotely-invoked automatic stations operating under 97.221(c) to impact the much larger population of phone operators.

RM-11306 provides no credible approach for preventing this increase in interference. Its reference to listen-before-transmit protocols is superficial. While listen-before-transmit technology has been successfully prototyped, it has not been deployed by any of the message passing services currently operating under 97.221(b) or 97.221(c). RM-11306 provides no incentive for remotely-invoked automatic stations to adopt listen-before-transmit technology. RM-11306 does not require automatic stations to periodically transmit their callsign using an un-encoded common mode and format, a prerequisite for the self-policing on which any successful band plan would depend.

"Respectful operation" is certainly necessary, but is not a solution to the current interference problem, much less the larger interference problem that adoption of RM-11306 would create. Today's operators of remote stations that activate automatic stations under 97.221(c) are in fact operating respectfully. It is the automatic stations they activate that do no forgo transmission when doing so would interfere with an ongoing communication.

I do not oppose band segmentation by bandwidth maxima, automatic operation, or remotely-invoked automatic operation. A competent proposal that proactively addresses the interference issues described above -- for example, by constraining automatic operation without listen-before-transmit capability to sub-bands -- should be adopted when proposed. RM-11306 falls well short of this standard, and should be rejected.

David H. Bernstein, AA6YQ
Member, ARRL